In some respects it approaches *Bromus laevipes* Shear, but is not closely related to that species.

Elymus **aristatus** sp. nov. A rather stout, somewhat glaucous, glabrous, tufted erect perennial about 9 dm. high, with flat leaves; strict erect purplish spikes, subulate empty glumes and awned flowering glumes. Sheaths shorter than the internodes; ligule firm, membranous, about 2 mm. long; leaf-blades 1 to 2 dm. long, about 8 mm. wide, glabrous beneath, striate and somewhat scabrous above. Spikes rather densely flowered, 10 to 14 cm. long, about 5 mm. in diameter, the common rachis scabrous on the margins. Spikelets two or three at each node, 2- to 8-flowered; empty glumes subulate, 0.5 mm. broad at the base, about 12 mm. long, scabrous; flowering glumes lanceolate, 6 to 8 mm. long excluding the awns, sparingly but rather strongly scabrous, tapering into a stout straight scabrous awn which is from 3 to 5 mm. in length.

Type specimen No. 2712, W. C. Cusick, in large clumps, Silver Creek, Harney Co., Oregon, July 31, 1901.

A species closely related to *Elymus triticoides* Buckl., which it resembles in habit of growth, although not at all stoloniferous, but from which it is distinguished by its much longer empty glumes and long-awned scabrous flowering glumes. In the type of *Elymus triticoides* in the herbarium of the Philadelphia Academy of Natural Sciences the empty glumes are from 6 to 8 mm. long and the flowering glumes nearly or quite glabrous, acute, or bearing an awn about 1 mm. in length.

THE CHILIAN EMPETRUM IN NEW ENGLAND.

M. L. Fernald.

In August, 1894, Mr. Clarence H. Knowlton and the writer found on the ledges not far above timber line on Saddleback Mt. at the head of the Sandy River, Maine, a luxuriant Crowberry with large juicy reddish or plum-colored fruit. The berries were much larger than the black fruits with which the writer had been familiar on the eastern coast of Maine; and this difference was further emphasized later in the day when at the "pinnacle" of Saddleback (alt. 4450 ft.) the ordinary *Empetrum nigrum* with coal-black fruit was found. But the matter was given little more attention at the time, although Mr. Knowlton soon after reported the form with plum-colored fruit from the slopes of a lower Mt. Saddleback (2200 ft.) in Perkins Planta-

tion near Wilton and Carthage; and it was noticed by the writer on tablelands and slopes at 1500 to 3000 ft. on various minor mountains of central and western Maine. In fact, from its general distribution on the lower mountains of Maine the plant had come to be looked upon by him as an ordinary form of *Empetrum nigrum* with redder fruit than generally described.

Recently, however, an examination has shown that this reddish fruited Crowberry differs in another character from the black-fruited *Empetrum nigrum*. In the common species of arctic and subarctic Europe, Asia, and America the branchlets are glabrous or at most minutely pulverulent-roughened. In the common form of central and western Maine the branchlets are tomentose or even lanate and the young leaves more or less covered with a loose web of hairs.

A tendency to red fruit is not unknown in the ordinary northern plant with glabrous twigs; and such a plant was described by Rafinesque as *Empetrum purpureum*.[1] His species, however, described as smooth, is apparently a form of *E. nigrum* and not the plant with tomentose branchlets. This latter plant of central and western Maine is represented in the Gray Herbarium by a single sheet from the Bay of Islands, Newfoundland, an old sterile branch collected by Oakes in the White Mts., and a fruiting branch collected by William Boott in Carter Notch, New Hampshire; and it has been collected by Dr. G. G. Kennedy on the slopes of Mt. Washington. Besides these specimens from Newfoundland and New Hampshire no other material from North America, Europe, or Asia is found to match the pubescent plant of interior Maine; while the shrub of the Maine coast, of the summits of Mts. Washington, Clay, Lafayette, and Mansfield, and of Lake Superior, Labrador, and Arctic America agrees with the European *E. nigrum* in having glabrous or at most pulverulent branchlets.

In the Gray Herbarium, however, there are two sheets from the Andes of Chili which in habit, foliage and pubescence closely match the common form from interior Maine. This Chilian plant was described in De Candolle's Prodromus as *Empetrum nigrum* γ *andinum*[2] and it was said to be glabrate, and to have red fruit; but Hooker[3] in discussing the genus had previously treated the Chilian plant as identical with *E. rubrum*, Willd.[4]

[1] New Flora, iii. 50 (1836).
[2] DC. Prodr. xvi. pt. 1, 26 (1869).
[3] Hook. Fl. Antarct. ii. 345 (1847).
[4] Willd. Spec. iv. pt. 2, 713 (1806).

Empetrum rubrum was described from the straits of Magellan and though treated by Hooker as identical with the Chilian plant it was maintained as varietally distinct by De Candolle. Judged by the material of *E. rubrum* from the original region, Tierra del Fuego, Hermite Island, and the Falkland Islands, De Candolle's course seems the wisest, for the Fuegian and Falkland plant is far more pubescent and has much coarser broader and flatter leaves than the Chilian. The latter plant, however, var. *andinum*, De Candolle, as represented by material from the Chilian Andes collected in 1854 by Lechler and in 1860 by Ochsenius has narrower leaves, and these and the young branchlets, which are eventually glabrate, are at first conspicuously tomentose as in the reddish-fruited plant of northern New England and western Newfoundland. With such close identity of characters and with no points by which the two plants can be distinguished the writer feels no hesitation in indentifying the pubescent-branched and reddish-fruited Crowberry of New England with *Empetrum nigrum*, var. *andinum*, DC., of the Chilian Andes.

Upon first thought it seems very extraordinary that identical plants should be found in such remote regions as New England and Chili, especially when no intermediate stations are known. But many similarly striking cases of isolated localities have been discussed in the past. As long ago as 1859 Charles Darwin, extending Edward Forbes's theory of a southern migration of northern types to include transtropical migrations, called attention[1] to the presence at isolated alpine stations in the South American Cordillera and as far south as Tierra del Fuego of plants found in boreal North America and Europe. The same point was more distinctly emphasized by Sir Joseph Hooker in his splendid analyses of the distribution of arctic plants.[2] There he showed that of the 586 Arctic-scandinavian plants recognized by him 40 are known in tropical America and 70 in temperate South America. This remarkable isolation of northern European species in South America was accounted for by the natural path for migration from the extreme North formed by the continuous chain of the Cordillera of western America. During the intensely cold periods preceding or accompanying the Glacial Epoch the plants of northern origin and broad circumpolar distribution found in this

[1] Origin of Species, 373, etc.

[2] Trans. Linn. Soc. xxiii (1861), 251, etc. and in Jones, Man. Nat. Hist. Geol. and Phys. of Greenl. 197, etc.

essentially uninterrupted mountain chain conditions under which they could thrive even in equatorial regions; and among the higher mountains of Mexico, Central America, and the Andes of western South America they still occur in isolated areas just as they do more abundantly on our own New England mountains and coast. Thus it is possible to account for the presence of *Cystopteris fragilis* and *Phleum alpinum* at an altitude of 12000 feet on Mt. Orizaba in southern Mexico;[1] of *Carex capitata* in meadows of the Sierra Madre in Chihuahua; of *Sagina procumbens* among the mountains of Chili;[2] of *Trisetum subspicatum* in the Andes of Peru and at the Straits of Magellan; of *Montia fontana*, *Draba incana*, *Primula farinosa*, *Lycopodium Selago*, *Carex magellanica*, *Cerastium arvense*, var. *fuegianum* (recently identified with a Rocky Mt. plant — see Hollick & Britton, Bull. Torr. Club, xiv. 50) from the Straits of Magellan, the Falkland Islands or adjacent regions;[3] and the many other boreal and arctic plants recorded by Hooker, Gay, and others from extra-tropical South America.

The discovery of *Empetrum nigrum*, var. *andinum* in New England, like that of *Cerastium arvense*, var. *fuegianum* in the Rocky Mts., simply adds, then, one more to this most interesting list of unexpected identities.

As now understood by the writer the characters and American distribution of the two Crowberries is as follows:—

EMPETRUM NIGRUM, L. Spec. 1022 (1753). Young branchlets glabrous or at most pulverulent-roughened: berries usually black, rarely reddish when mature.— Greenland and Arctic America, south to the Gulf of St. Lawrence and along the coast to Penobscot Bay, Maine, on the higher mountains to MAINE, Katahdin (*Thurber*, etc.), Saddleback (*C. H. Knowlton & M. L. Fernald*), and Baldpate, Grafton (*J. A. Allen*); NEW HAMPSHIRE, Mt. Washington (*Boott*, etc.), Mt. Clay and Mt. Lafayette (*E. F. Williams*); VERMONT, Mt. Mansfield (*Eggleston*, etc.); NEW YORK, Whiteface (*Rowlee*, *Wiegand* & *Hastings*); LAKE SUPERIOR (*Houghton*); WASHINGTON, Mt. Rainier (*E. C. Smith*, etc.); OREGON, seashore bluffs, Bandon (*Howell*).

E. NIGRUM, var. ANDINUM, DC. Prodr. xvi. pt. 1, 26 (1869). Branchlets and young leaves tomentose or lanate; berries generally reddish or plum-colored.— NEWFOUNDLAND, Bay of Islands (*Wag-*

[1] See Hemsl. Biol. Cent.-Am. Bot. iv. 296, 297.

[2] Gay, Fl. Chil. i. 283.

[3] See Hook. Antarctic Fl.

horne); MAINE, rocky slopes and summits of Mt. Katahdin (*Thurber*, etc.), Boarstone — alt. 2000 ft. (*M. L. Fernald*), Squaw — alt. 3000 ft. (*M. L. Fernald*, no. 277), Saddleback, Rangeley — alt. 3500 ft. (*C. H. Knowlton & M. L. Fernald*), Saddleback, Perkins — alt. 2200 ft. (*C. H. Knowlton*), White Cap, Rumford (*J. C. Parlin*), and Speckled Mt., Franklin — alt. 2000 ft. (*J. A. Allen*); NEW HAMPSHIRE, "White Mts." (*Oakes*), Carter Notch (*Wm. Boott*), slope of Mt. Washington (*G. G. Kennedy*); CHILI, higher Andes.

GRAY HERBARIUM.

FURTHER NOTES ON SOLANUM ROSTRATUM AND HIERACIUM PRAEALTUM IN MAINE.— The notes by Mr. O. W. Knight on the appearance east of the Kennebec of *Solanum rostratum* (RHODORA, iii. 276) and *Hieracium praealtum* (RHODORA, iv. 61) may be supplemented by the following observations.

In August, 1900, *Solanum rostratum*, the Buffalo Bur, was noticed in a border of phlox on the campus of the University of Maine at Orono. It was probably introduced there in seed purchased in western New England. The eastern distribution of the Buffalo Bur seems to be almost wholly through commerce; and in Maine it was first detected at Buxton where western grain had been screened.

While visiting the famous station for Mountain Laurel, *Kalmia latifolia*, at Carmel, on July 1, 1898, the writer observed the King-Devil Weed, *Hieracium praealtum*, sparingly established in an adjacent meadow. The following note was made: "Sparsely growing in a meadow with the Mouse-ear Hawkweed, *Hieracium pilosella*, and evidently mistaken for that species." This observation was recorded in an article by the writer on the weeds of Maine and the bad character of the weed was commented upon. In one year it had spread more than had the Orange Hawkweed, *H. aurantiacum*, in twenty. The Carmel station is some twenty miles southwest of that recorded by Mr. Knight; and its observation in Carmel in 1898 supports his supposition "that the plant must have been established in this locality for a number of years to have become so abundant."

This Carmel station furnishes a connecting link between the well-known Gardiner locality seventy-five miles southwest (recorded by D. H. Knowlton in 1895), and the Kenduskeag and Corinth stations of Mr. Knight about twenty miles northeast. These stations indicate a most rapid northeastern invasion of one hundred miles in six years, — an invasion to be regarded with dread by the agriculturist, since